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AUTHOR Makedon, Alexander
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ABSTRACT

Science is very near the core of everything that Dewey commented about regarding society, education, philosophy, or human beings. According to Dewey, the scientific method allows for the maximum possible impartiality, is the only one compatible with the democratic way of life, lends itself to public scrutiny, and is the method of intelligence. This paper describes Dewey's views on: (1) Science and Nature; (2) Science, Morals, and Democracy; and (3) Play. (PR)

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Alexander Makedon
Chicago State University

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Reinterpreting Dewey:
Some Thoughts on His Views of Play and Science in Education

Alexander Makedon
Chicago State University

Dewey's View of Science

Science is very near the core of everything that Dewey said regarding society, education, philosophy, or human beings[1]. Typical of his overall approach to science is his statement that "Ultimately and philosophically, science is the organ of general social progress."[2] If, as some philosophers argue, art is for art's sake, it may be said that to Dewey science should be pursued for the sake of science. According to Dewey, the scientific method allows for maximum possible impartiality[3], is the only one compatible with the democratic way of life[4], lends itself to public scrutiny[5], and is the method of intelligence[6]. In his enthusiasm for modern scientific methods, Dewey went so far as not only to redefine the role of scientific method in education, but in the hope of changing people's attitudes about science, even re-defined the common dictionary definition of such terms as habit and work[7]. Although Dewey offered a more or less "conventional" definition of science, such as, the testing of hypotheses in experience, or the changing of old conclusions to fit new empirical findings[8], his real contribution lies in building a network of science-centered concepts that seem to underlie not only scientific inquiry, but the whole concept of a democratic society[9]. Overall, he praised science almost unqualifiedly even in spite of his frequent, and on their face seemingly contradictory disclaimers regarding the inhumane uses to which science may be put[10], its cold instrumentality[11], or the primary role of the artistic (as opposed to scientific) attitude in professional teaching[12]. Her majesty science is crowned as much the rightful queen in Dewey's kingdom, as philosophy is in Plato's Republic. Dewey's travels in philosophy are those of a protector of the new age of science, constantly in search of new converts, new methods, new ideas, new habits, and new attitudes. He advocated that science become a habit "with intense emotional allegiance,"[13] meaning, something which people will zealously believe in, fight for, and defend. He approved of the possibility of science becoming a widespread human desire, and thus reinforcing itself in ever increasing social circles[14]. It is small wonder that Dewey should become involved in education. Like all moral philosophers worth their salt, Dewey, too, sought to re-build society by re-constructing education. As the guarantor of ideological survival of scientific paradigms well into the future, science-like education plays a key role in Dewey's thought in generating scientific attitudes and beliefs, and in closing the self-perpetuating circle that starts-ends with education, and ends-starts with scientific institutions.

Like all great philosophers ever since Plato, Dewey, too, travelled in ever larger circles that made it harder and harder for the non-initiated to see their common center. In his enthusiasm for

the role of science in society, and by default, if not by design, in education, Dewey seems to have allowed a much more central role for science, than the underlying logic of his premises may have warranted. For example, he did not fully address some of the more obvious criticisms against science, or anticipate or discuss the educational usefulness of non-scientific methods. For example, he did not fully discuss or credit the role that imagination-centered education, role-play, or metaphysical discussion, may have in the development of democratic character. Other issues which merit further analysis include the morality of treating nature as a mere means for scientific development; the purely a-moral or instrumental nature of science[15]; the employment of scientific methods by non-democratic regimes[16]; the possible non-objectivity of scientific inquiry, including its underlying historical and cultural relativism[17]; its possibly becoming another essence in the Deweyan lexicon of imperative anti-essentialism [18]; its game-like qualities; and finally, and more importantly from an educational perspective, science being possibly used in education not as a means for more control over nature, or more useful work, or more human-centered or "utilitarian" purposes, as advocated by Dewey[19], but for better understanding other cultures, coexisting with non-human world-parts (=parts of world that are not limited to human beings), and engaging in meaningful and enjoyable play[20].

Science and Nature

Dewey saw science as giving humans control over nature[21]. For example, he wrote that "[m]odern experimental science is an art of control."[22] He went on to argue that ever since the rise of modern science, nature has become "...something to be modified, to be intentionally controlled."[23] His human-centered, utilitarian approach to nature (as contrasted to a more universal approach that sees humans as only the interpreters of universal phenomena[24]) comes clearly through in his statement that nature is material to "be acted upon" to benefit humans. As he put it,

> [Nature] is material to act upon so as to transform it into new objects which better answer our needs. Nature as it exists at any particular time is a challenge, rather than a completion; it provides possible starting points and opportunities rather than final ends[25].

It may be argued that humans should have at least some control over nature to survive physically. This doesn't mean that they should use science to "control" or "master" nature, as was proposed by Dewey, since historically there is proof they were able to survive long before the advent of modern science, and may even cause themselves more harm, than good, by trying to control it[26]. It would have been interesting to know whether Dewey might have been as enthusiastic a proponent of science, or of its contributions to natural mastery, if he were alive today to witness the constant destruction of nature by technologically advanced humans. Perhaps

his dislike for any type of teleological morality may account for his inability to foresee the destructive uses to which science may be put. On the other hand, had he approached metaphysical morality more selectively, on the basis, for example, of extrinsically good and bad ends (as opposed to rejecting outright all apriori notions of morality[27]), then he may have defended more arduously the sanctity of nature over the unbridled exercise of the scientific method.

Although Dewey points disapprovingly to the bad uses to which science may be put, such as, coercion, intimidation, and deception[28] (and in retrospect one may add the development of weapons of mass destruction), he mentioned its possible abuses without further analysis, almost as a footnote to his more elaborate development of scientific benefits. His definitely pro-scientific attitude is so apparent that one may argue that even in spite of his anti-essentialist attacks, science has become another essential value, metaphysical idea, or ideal ethic in his philosophy[29]. In his defense, Dewey may argue that science is by nature anti-essentialist, as its aims are to verify claims in experience, as opposed to ascribing experience itself to a prior essence. Apart from the issue of whether any hypothesis testing can begin without some prior preconception of what constitutes "testing," if not "experience" itself, and therefore without some type of preconceived ideas or "essences," the fact remains that Dewey didn't analyze his own metaphysical claims thoroughly enough to respond to the criticism that science, too, is no more than another preconceived essence, value, or belief system. Ironically, an ideal it seems to have become in Dewey's philosophy, however large the circle that Dewey drew around it, his attacks anti-metaphysical, his exhortations anti-essentialistic[30].

Science, Morals, and Democracy

What kind of morals does science provide? Implied in Dewey's assertions about science is the idea that underlying science is a certain type of true morality. Although Dewey referred to science as a method, he also broke down the distinction between ends and means[31], implying that a method, such as science, can also serve as an end. It may be argued tha according to Dewey, democracy is a larger end than science[32]. If that were the case, then why didn't Dewey advocate democracy even in spite of the use of the scientific method? As he put it, "[t]he experimental method is the only one compatible with the democratic way of life, as we understand it."[33] Dewey felt that the scientific method will promote cooperation and scientific habits that ultimately will help produce democratic personalities. Yet the fact is that many scientists work in isolation. They discover something new frequently as a result of an inspiration they had while hit by the proverbial apple all alone under a lonely tree, than as a result of the give and take which Dewey described. It may be argued that scientists should not work that way, but instead work cooperatively, in a Deweyan fashion, to

count as "true" scientists. If we reject what many scientists do, or how science is often used, to make our conception of science fit Dewey's, then aren't we redefining science even in spite of "scientific evidence" to the contrary? Finally, if Dewey really valued the establishment of democratic habit more than science, then why not include in education all those methods which Dewey clearly considered unscientific, such as, untestable story telling, metaphysical class discussions, or unreal role playing, but which collectively may contribute as much to the development of democractic character, as does science?

Dewey's View of Play

Play is too subjective, and sometimes has the uncontrollable tendency of becoming too imaginative, for anyone as reality-bound, experiential, and pragmatic, as Dewey, to really like it. According to Dewey, play apart from work is foolishness[34], may be demoralizing[35], may stifle educational growth[36], and if pursued for its own sake may lead to irresponsible behavior[37]. Some of the other terms used by Dewey to characterize play, which collectively may be seen as his philosophical necklace of "poisonous play pearls," include play as arbitrary and fanciful[38], morbid[39], aimless[40], and useless[41]. There are several theorists who may disagree with Dewey's assessment of the value, usefulness, or desirability of play[42]. For example, regarding its lack of ends, something which Dewey emphasized in his analysis, several theorists wrote that play is not only well aimed, but serves as the basis of civilization[43]. Dewey also felt that play may lead to exercising one's imagination without doing, experimentation, or actualization, which is dangerous[44]. True, Dewey did acknowledge the usefulness of play as a means for the achievement of other goals, but only as a means[45]. Although there are times when Dewey rose above his scientific corner, as when he acknowledges the social[46], moral[47], educational[48], and psychological benefits of play[49], and even ridicules the puritanical distrust of play[50], nevertheless he failed to recognize that play may be no less educative than the scientific method, and equally no more miseducative if used for undesirable ends. In retrospect, it may be said that given the secondary role that he assigned to play vis-a-vis work and science, not to mention his stinging attack against its presumably asocial qualities, he may have been himself the victim of the social attitude toward play which he criticized.

By contrast to his view of play, work holds a much higher place in Dewey's hierarchy of desirable goals. In fact, work is so important a goal in Dewey's ethereal world, that one wonders how much the protestant work ethic influenced his philosophy of play, even in spite of his religious liberalism, child-centered views in education, or outright criticism of puritanical extremes. Play is sacrificed in Dewey's scheme of things at the altar of purposeful work. Everywhere in his writings, play is stripped of its own identity as possibly an end-in-itself, and becomes, instead, the

perennial "handmaiden:" handmaiden to science[51], work[52], society[53], or education[54]. Thus play allows for more ideas at the pretesting stage, play allows the teacher to find the native needs and interests of the child, play is preparation for work. Play even allows for the release of energy, characteristically serving as a safety valve, but not as the key to educational development[55]. Compared to his view of work and science, play is denied full citizenship in his world of relative ends.

Dewey was faced with the problem of advocating a child centered education which makes direct appeal to a student's "native needs and interests," while simultaneously holding on to an idea as clearly non-inner directed, let alone hedonistic, as work. This dual allegiance to work and child-centeredness becomes even more problematic in the context of a largely protestant culture, as was the United States at the time that Dewey wrote, which sees work as a means of keeping away evil, if not as the only road to personal salvation[56]. The work ethic gains a new significance in this country because of its puritanical roots, which gave it a particularly self-denying twist. Perhaps realizing that he can't advocate work while simultaneously holding on to such human-centered views as democracy and interest, Dewey decided simply to redefine work to mean something more like play, that is, voluntary, spontaneous, authentic, and purposeful. As he put it regarding his description of work activities, "[t]he dictionary does not permit us to call such activities work."[57] His view of work, then, is that it is play, except it seems to be more social, purposeful, and utilitarian. He calls other types of work that are not intrinsically motivated drudgery, toil, or labor[58]. Elsewhere, he offered that both play and work, or at least as he redefined the meaning of the term "work," are "... equally free and intrinsically motivated, apart from false economic conditions which tend to make play into idle excitement for the well to do, and work into uncongenial labor for the poor."[59] On its face, it seems that given Dewey's emphasis on interest and personal background, play should play a more paramount role in his pedagogy than either science, or "work." In fact, for all practical purposes, he really meant by work "play," except perhaps he may have been psychologically unprepared to call such work "play." In any event, the author would like to propose that instead of play becoming the handmaiden of science, as proposed by Dewey, science is used to understand nature, so students can engage in more meanignful inter-play among themselves, and between humans and other world parts[60].

Endnotes

All references to Dewey's works, except where noted, are from The Collected Works of John Dewey, 1882-1953, ed. Jo Ann Boydston (Carbondale, Illinois: Southern Illinois University Press, 1969-1991). The Collected Works are divided into three parts in the series:

The Early Works, 1882-1898
The Middle Works, 1899-1924
The Later Works, 1925-1953.

Since Dewey's works have been exhaustively indexed in the series, the author limited his endnotes, below, to the title of a work appearing in the series, followed by the page number(s) for the specific reference made in the paper. He included the period and volume number only on the first appearance of a reference in the endnotes.

1. Dewey's enthusiasm for science is evident in several of his writings. For example, see Underlying Philosophy of Education, Later Works, vol. 8, p. 102; Abstracts of Kaizo Articles, Middle Works, vol. 13, p.434; Experience and Education, Later Works, vol. 13, p. 54; Democracy and Education, Middle Works, vol. 9, p. 239.

2. Democracy and Education, p. 239.

3. Abstracts of Kaizo Articles, p. 434.

4. Underlying Philosophy of Education, p. 102.

5. Abstracts of Kaizo Articles, p. 434.

6. Experience and Education, p. 54.

7. On Dewey's view of work, see How We Think (1933), Later Works, vol. 8, p. 286; Democracy and Education, pp. 214, 325; Individualism Old and New, Later Works, vol. 5, p. 120; on his view of habit, see Democracy and Education, p. 334.

8. Logic: The Theory of Inquiry, Later Works, vol. 12, pp. 115-116, 122.

9. Underlying Philosophy of Education, p. 102.

10. Abstracts of Kaizo Articles, pp. 435-436.

11. Individualism Old and New, pp. 105-106; Democracy and Education, p. 339.

12. Sources of a Science of Education, Later Works, vol. 5, pp. 16-17.

13. Experience and Education, p. 54.

14. Freedom and Culture, Later Works, vol. 13,p. 163.

15. On Dewey's view of the instrumentality of science, see Individualism Old and New, pp. 105-106; and Democracy and Education, p. 292.

16. On Dewey's discussion of some of the bad uses to which science may be put, see Abstracts of the Kaizo Articles, pp. 435-436.

17. Typical of this view is Thomas Kuhn's classic work on the history of scientific progress, The Structure of Scientific Revolutions (Chicago: University of Chicago Press, 1962).

18. We return to this point, below.

19. On Dewey's view of the relation between science and nature, see Quest for Certainty, Later Works, vol. 4, pp. 80-82, 85, 103; Sources of a Science of Education, Introduction, p. xxx; and Democracy and Education, pp. 219, 231.

20. A. Makedon, chapter on "Science," Humans in the World: An Introduction to Radical Perspectivism (in progress).

21. Democracy and Education, pp. 219, 231, 292; Quest for Certainty, pp. 80-82, 85. See also Paul Kurtz's interpretation, Introduction, Sources of a Science of Education, p. xxxi.

22. Quest for Certainty, p.80.

23. Quest for Certainty, pp. 80-81.

24. See chapter on "ManWorld," Humans in the World.

25. The Quest for Certainty, p. 81.

26. See the chapter on "Conquest," Humans in the World.

27. Human Nature and Conduct, Middle Works, vol. 14, pp. 6-9.

28. Abstracts of Kaizo Articles, pp. 435-436.

29. A point noted also by Richard Rorty, Introduction, Later Works, vol. 8, p. xiv.

30. For a review of the logic of science, see A. Makedon, "The Logic of Science," in Makedon, "Is Teaching a Science or an Art," Proceedings of the Midwest Philosophy of Education Society, 1989 & 1990, ed. D. B. Annis and M. A. Oliker, pp. 238-239. ERIC Document no. ED 330 683.

31. Superstition and Necessity, Early Works, vol. 4, pp. 29-32; Interest and Effort in Education, Middle Works, vol. 7, pp. 165-174; Human Nature and Conduct, Middle Works, vol. 14, 184-188; Experience and Nature, Later Works, vol. 1, p. 276-277; The Quest for Certainty, pp. 222-224; Theory of Valuation, Later Works, vol. 13, pp. 211-216.

32. See Sidney Hook's analysis, Introduction, Democracy and Education, Middle Works, vol. 9, pp. ix-xii.

33. Underlying Philosophy of Education, p. 102.

34. How We Think, p. 346.

35. Democracy and Education, pp. 211-212.

36. School and Society, Middle Works, vol. 1, p. 88.

37. How We Think, p. 285.

38. How We Think, p. 285.

39. School and Society, p. 202.

40. School and Society, pp. 209-210.

41. Human Nature and Conduct, pp. 112-113.

42. For a review of theories of play, see A. Makedon, Theories of Play (Ann Arbor, MI: Unpublished doctoral dissertation, 1981); and Makedon, "Playful Gaming," Simulation and Games (vol. 15, no. 1, March 1984), pp. 25-64.

43. Joan Huizinga, Homo Ludens: A Study of the Play Element in Culture (Boston: Beacon Press, 1950); Josef Pieper, Leisure: The Basis of Culture (New York: The New American Library, 1963); and Friedrich Schiller, On the Aesthetic Education of Man in a Series of Lectures, tr. R. Snell (New Haven: Yale University Press, 1954).

44. School and Society, p. 340.

45. Schools of Tomorrow, Middle Works, vol. 8, p. 288; Interest and Effort in Education, p. 323; Human Nature and Conduct, p. 112; How we Think, p. 346.

46. Schools of Tomorrow, p. 289.

47. Human Nature and Conduct, p. 112.

48. Interest and Effort in Education, p. 320; Schools of Tomorrow, p. 288.

49. Human Nature and Conduct, p. 111.

50. Human Nature and Conduct, p. 110.

51. How We Think, p. 309.

52. Human Nature and Conduct, pp. 112-113; Democracy and Education, p. 212.

53. Contributions to A Cyclopedia of Education, Middle Works, vol. 7, p.322.

54. Interest and Effort in Education (Boston: Houghton Mifflin, 1913), pp. 76-80, 86. This version, published in 1913, does not appear in the Collected Works.

55. School and Society, pp. 198. This is an idea held originally by Karl Groos, The Play of Man (New York: Appleton, 1898).

56. This idea is examined by Max Weber in his classic analysis of the "protestant ethic" in The Protestant Ethic and the Spirit of Capitalism (London: George Alen and Unwin, 1930).

57. How We Think, p. 286.

58. How We Think, p. 346; Interest and Effort in Education, pp. 189-190.

59. Democracy and Education, p. 214.

60. On the author's view of the role of science and play in education, see chapters on science, play, and pedagogy in Humans in the World.